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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,630	06/28/2001	Seigi Aoyama	3008-28	4486
20457	7590	10/04/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			DINH, TUAN T	
		ART UNIT	PAPER NUMBER	
		2841		

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/892,630	AOYAMA ET AL.
	Examiner Tuan T. Dinh	Art Unit 2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 19 September 2005.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 2,4,5,7 and 14-22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 17 is/are allowed.  
 6) Claim(s) 2,4,5,7,14-16 and 18-22 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

The request filed on 09/19/05 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/892,630 is acceptable and a RCE has been established. An action on the RCE follows.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 2, 14-16, 19-20, 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Domi et al. (U.S. Patent 6,319,461)

**Regarding claims 2, 15-16, 20, and 22,** Domi discloses a lead free solder alloy (see an abstract) comprising:

an alloy composition containing: 0.002-0.015% by mass of phosphorus (P<1.0 % weight, see column 2, lines 49-52) with the balance consisting of tin (column 3, line 37), wherein bismuth (Bi), antimony, and gallium are not added to the alloy composition, and the alloy composition excluded bismuth, gallium, antimony, and titanium.

Note: in column 2, lines 23-24, and 49-52, Domi discloses in a present invention preferably contain at least 0.0001% by weight of O, and further contains a weight of P,

which is less than 1%. Therefore, the lead free solder is excluded titanium in the alloy composition.

Regarding claims 14 and 19, Domi discloses the alloy composition further comprising: 2.0-5.0% by mass of silver (column 2, lines 27-29); and 0.01-2.0% by mass of copper (column 2, lines 30-32).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5, 7, 18 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Kenji et al (hereafter PA, figures 1 and 2 submitted by applicant) in view of Domi et al. (U.S. Patent 6,19,4613).

Kenji discloses a connection lead as shown in figures 1-2 comprising:  
a copper strip (1) or other strip conductor; and  
a plating (2a, 2b) provide on at least one side of the strip conductor, said plating being formed of a lead-free solder composed mainly of tin, and has a shape such that the plating in a widthwise direction of the strip conductor having a bulge formed of an arc, a triangle, or stairs as viewed in section with an apex being located at a proper position in the widthwise direction of the strip conductor.

Kenji does not show said plating containing 0.002 to 0.015% by mass of phosphorus, 2.0-5.0% by mass of silver, 0.01-2.0% by mass of copper, with the balance consisting of tin excluding bismuth, antimony, gallium, and titanium.

Domi teaches an alloy composition containing 0.002 to 0.015% by mass of phosphorus, 2.0-5.0% by mass of silver, 0.01-2.0% by mass of copper, and balance of tin, the alloy excluding bismuth, an antimony, gallium, and titanium (see explanation in claim 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching's Domi employed in the connection lead of PA for the purpose of improving a thermal fatigue characteristic of a solder alloy, and a thermal and electrical conductivity connection.

#### ***Allowable Subject Matter***

5. Claim 17 is allowed.

The following is an examiner's statement of reasons for allowance: the references cited do not teach or render in combination of an alloy composition consisting of 0.002-0.015% by mass of phosphorus (P); 2.0-5.0% by mass of silver (Ag); 0.01-2.0% by mass of copper (Cu); and tin.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

Applicant's arguments with respect to claims 2, 4-5, 7, 14-22 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues:

Domi does not disclose an alloy excluding titanium.

Examiner disagrees because in column 2, lines 23-24, and 49-52 of the Domi reference, Domi discloses in a present invention preferably contain at least 0.0001% by weight of O, and further contains a weight of P, which is less than 1%. Therefore, the lead free solder does not include titanium or the alloy is excluded titanium in the alloy composition.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Tuan Dinh".

Tuan Dinh  
May 6, 2005.